DOCUMENT RESUME

ED 251 657 CE 040 262

TITLE Graphic Communications. Progress Record, Theory

Outline.

INSTITUTION Connecticut State Dept. of Education, Hartford. Div.

of Vocational-Technical Schools.

PUB DATE Sep 83

NOTE 64p.; For related documents see CE 040 261.

PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01/PC03 Plus Postage.

DESCRIPTORS Behavioral Objectives; Course Content; Course

Descriptions; High Schools; Industrial Arts; *Job Performance; Job Skills; Photocomposition; *Printing; Recordkeeping; *Reprography; Safety; *School Shops; Secondary Education; Student Evaluation; *Student

Records

IDENTIFIERS *Graphic Communication

ABSTRACT

Intended to reduce unnecessary paper work on the part of the shop instructor in a graphic communications -ourse, this job assignment book offers a simplified method of keeping student records up-to-date. It first provides a record/form with areas for student name, tool check number, locker number, textbook number, and grades; broad course objectives; course objectives for grades 10, 11, and 12; and instructions for recording student progress on the shop progress records. The student progress records follow. These identify the operations/skills that the student in a graphic communications course is expected to learn and provide a space in which the instructor records student progress as (1) instructed, (2) practiced, or (3) proficient. The theory outline appears next. Twenty-six topics are covered, including orientation, history, major printing processes, introduction to lithography, careers, layout, copy preparation, reproduction photography, the process camera, line photography, contacting, halftime photography, special effects, process color, quality control devices, proofing methods, stripping, platemaking, offset duplicator, offset press. printing inks, printing papers, finishing and binding, job planning, and employer/employee relations. Space is provided for each topic to indicate lesson plan number and dates scheduled, presented, and tested. (YLB)

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GRAPHIC COMMUNICATIONS DIVISION OF VOCATIONAL-TECHNICAL SCHOOLS

Prepared for

Connecticut State Department of Education
Division of Vocational and Adult Education
Bureau of Vocational Program Planning and Development
Hartford, Connecticut 06115

This project was supported by funds made available. To Connecticut through the Vocational Education. Act of 1976, Public-Law 94-482.

PREFACE

The objective of this Assignment Book is to reduce unnecessary paper work on the part of the shop instructor.

This Assignment Book will assist the instructor to keep student records up to date.

This outline, general in nature, was planned with flexibility so that each instructor may adapt his course of study to meet the particular needs of each student and the specific needs of the printing Industry in each geographic area.

In shops doing production work it is necessary to devise flexible daily lesson plans well in advance. This Assignment Book will assist the instructor in planning and organizing considerably in advance, thereby increasing his instructional efficiency.

The instructional staff should make an effort to keep abreast of technological developments in the industry. Continous communication with craft committees is recommended.

Please note that the book is not designed simply for planning. It has areas for locker assignments and text assignments. Students' names are entered only once for the entire course.



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THEORY OUTLINE

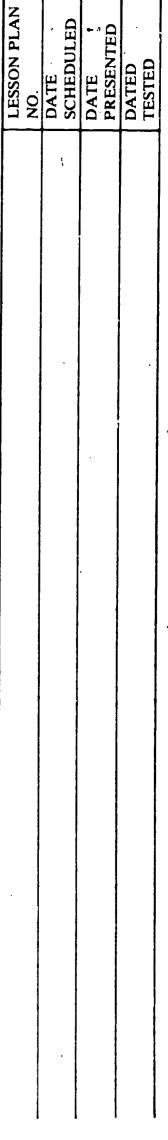
- I. ORIENTATION
- II. HISTORY OF GRAPHIC COMMUNICATIONS
- III. MAJOR PRINTING PROCESSES
- IV. INTRODUTION TO LITHOGRAPHY
- V. CAREERS IN GRAPHIC COMMUNICATIONS
- VI. THE LAYOUT
- VII. COPY PREPARATION
- VIII. REPRODUCTION PHOTOGRAPHY
 - IX. THE PROCESS CAMERA
 - X. LINE PHOTOGRAPHY
 - XI. CONTACTING
- XII. HALFTONE PHOTOGRAPHY
- XIII. SPECIAL EFFECTS
- XIV. PROCESS COLOR
- XV. QUALITY CONTROL DIVICES
- XVI. PROOFING METHODS
- XVII. STRIPPING
- XVIII. PLATEMAKING -
 - XIX. THE OFFSET DUPL!CATOR
 - XX. THE OFFSET PRESS
 - XXI. PRINTING INKS
- XXII. PRINTING PAPERS
- XXIII. FINISHING AND BINDING
- XXIV. JOB PLANNING
- XXV. EMPLOYEE/EMPLOYER RELATIONS
- XXVI. LEGAL CONSIDERATIONS



THEORY OUTLINE

I. ORIENTATION

- A. Definition of Graphic Communications
- B. Brief Outline of Industry '
 - 1. Scope
 - 2. Cultural Contribution
 - 3. Magnitude
- C. Shop Administration
 - 1. Rules and Regulations
 - > 2. Assignments
 - . 3. Materials Required
- D. Shop Safety (General)
 - 1. Fire Drills
 - 2. First Aid
 - 3. Fire Extinguishers
 - 4. Clothing and Personal Appearance
 - 5. Conduct in Shop
 - 6. Consideration of other's safety
- E. Safety Around Equipment
 - 1. Mechanical
 - 2. Electrical
 - 3. Hazardous Materials and/or Conditions
 - a. Flammables
 - b. Electrical
 - c. Lubricants
 - d. Chemicals
 - e. Other Hazards
 - 4. Procedure in case of Accidents
- F. Grading Procedure
 - 1. Theory
 - 2. Shop
- G. Shop Organization
 - 1. Departments
 - 2. Work Flow





II. HISTORY OF GRAPHIC COMMUNICATIONS

- A. Early Means of Communications
- B. Development of Printing until Movable Type

III. MAJOR PRINTING PROCESSES

- A. Relief Printing
- B. Intaglio Printing
- C. Screen Process
- D. Planographic Process
- E. Other Printing Processes

IV. INTRODUTION TO LITHOGRAPHY

- A. Invention of Lithography
- B. First Lithographic Presses
 - 1. Stone Lithography Today
- C. Discovery of the Offset Process
- D. Introduction of Photography to Printing

V. CAREERS IN GRAPHIC COMMUNICATIONS

- A. Divisions of Work
 - 1. Management
 - 2. Sales
 - 3. Layout, Design, and Art
 - 4. Composition
 - 5. Copy Preparation
 - 6. Camera Work
 - 7. Stripping
 - 8. Platemaking
 - 9. Presswork
 - 10. Bindery
 - 11. Electronic Technician
 - 12. Maintenance
 - 13. Estimating
 - 14. Shipping
 - 15. Service
 - 16. Research
 - 17. Quality Control
 - 18. Others



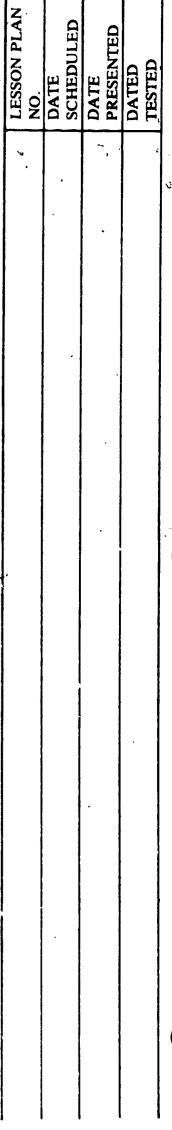
VI. THE LAYOUT.

- A. Types of Layouts
 - 1. Thumbnail
 - 2. Rough
 - 3. Comprehensive
- B. Reading Specifications
 - 1. Reference Marks
 - 2. Sizes
 - 3. Printer's Point System
- C. Type Styles
 - 1. Introduction to Type Styles
 - 2. Development
 - 3. Characteristics
 - 4. Classifications
 - 5. Selecting Proper Typefaces

VII. COPY PREPARATION

A. Careers

- 1. Paste-up artist/mechanical artist
- 2. Mark-up person
- 3. Keyboard operator
- 4. Proofreader
- 5. Phototypesetter operator
- B. Skills requirements
 - 1. Measurements
 - 2. Accuracy
 - 3. Neatness
 - 4. Drafting practices
 - 5. Follow directions
 - 6. Read and use dictionary
- C. Working conditions
 - 1. Quiet
 - 2. Well lighted
 - 3. Clean
 - 4. Limited contact with chemicals
- D. Composition Methods
 - 1. Hot type -- metal
 - a. Hand-set foundry type
 - b. Machine Composition





VII. COPY PREPARATION (Continued)

- 2. Cold type
 - · a. Strike-on
 - 1. Standard typewriter
 - 2. Proportional spacing typewriter

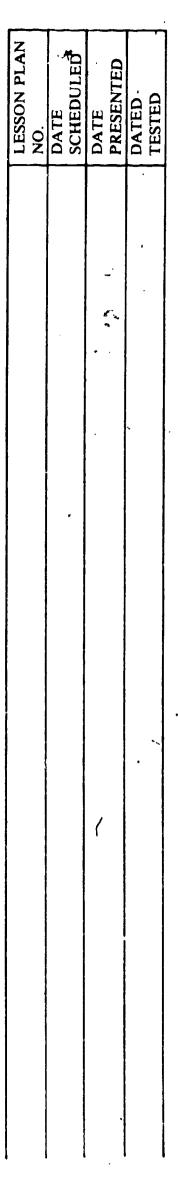
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- b. Dry-transfer lettering
- c. Photographic composition
 - 1. Display phototypesetter
 - 2. Text phototypesetter
 - 3. Computer-assisted phototypesetter
- 3. Cold Type Composition
 - a. Hand lettering (drawn by hand)
 - b. Special lettering
 - c. Maps
 - d. Covers
 - e. Design
 - f. Graphs
 - g. Lettering pens
 - h. Stencils
 - i. Templates
- 4. Clip art
 - a. Commercially prepared (cut out/paste up)
 - b. Line and halftone illustrations
 - c. Slogans, symbols, borders, decorations, word, etc.
 - d. Texture patterns, Ben Day, etc.
- 5. Adhesive type (pre-printed)
 - a. Letters on clear acetate (adhesive back)
 - b. Guide lines
 - c. Cut out/attach
- 6. Dry transfer type (pre-printed)
 - a. Plastic transparent sheets
 - b. Transferable ink
 - c. Letters, borders, illustrations, etc.
 - d. Guide lines
- 7. Tapes for paste-ups
 - a. Border (decorative)
 - b. Rule
 - c. Register marks
 - d. Symbols
 - e. Logos



VII. COPY PREPARATION (Continued)

- 8. Strike-On (impact composition)
 - a. Typewriters (standard)
 - b. Justifying typesetters
 - ·1. IBM composer
 - 2. Varityper
- 9. Photographic composition
 - a. Film or paper
 - b. Positives or negatives
 - c. Hand or machine
 - d. Contact printing
 - e. Projection printing
 - f. Photolettering
 - g. Phototypesetting
 - h. Kinds of equipment
 - i. Processing film or paper (stabilization/coated)
- 10. Typesetting input methods
 - a. Direct input
 - b. Tape perforating keyboarding
 - c. Magnetic tape keyboarding
 - d. Optical Character Recognition (OCR)
 - e. Direct computerized input
 - f. Video Display Terminal (VDT)
 - g. Remote transmission system
- 11. Composition formats
 - a. Flush left (ragged right)
- b. Flush right (ragged left)
 - c. Centered
 - d. Justified
 - e. Run around
 - f. Indentations
 - g. Tabular matter
- 12. Proofing
 - a. Reading methods
 - b. Proofreader's marks
 - c. Galley proofs
 - d. Page proofs





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E. Paste-up

- 1. Care and handling of layout elements and instruments
- 2. Reading layout specifications
 - a. Notations
 - b. Keys
- 3. Types of copy
 - a. Composition
 - b. Line art work
 - c. Captions -- cut lines
 - d. Headlines
 - e. Windows
 - f. Photomechanical
- 4. Necessary materials
 - a. Wax or rubber cement, glue stick
 - b. t-square
 - c. Triangle
 - d. Line gauge
 - e. Centering rule
 - f. Knife or razor blades
 - g. Tape
 - h. Mechanical masking film (red or amber)
 - i. Transparent overlay sheets
 - j. Blue pencil
 - k. Pens
 - l. Ink
 - m. Compass
- 5. Procedure for paste-up ·
 - a. Layout blue lines
 - b. Apply adhesive
 - c. Align and secure copy
 - d. Check for straightness and cleanliness of copy
 - e. Making corrections
 - 1. Pasting over
 - 2. Cutting in
- 6. Kinds of paste-ups
 - a. Single color
 - b. Multicolor
 - c. Signatures
 - d. Line/halftone combinations
 - e. Reverses

E. Paste-up (Continued) f. Outline halftones 7. Paste-up terms a. Center marks b. Trim marks c. Page size d. Register marks e. Overlays f. Gripper and guide symbols g. Gutter margin h. Foot i. Imposition F. Copy Mark-up and Proofreading 1. Mark-up specifications a. Type size and leading b. Type face c. Line length d. Format e. Caps, lower case (c/lc) f. Family branch g. Correction symbols 2. Proofing VIII. ORIENTATION TO REPRODUCTION PHOTOGRAPHY A. Types of reproductions 1. Line drawings 2. Halftones 3. Duotones 4. Special effects 5. Process color 6. Posterizations B. The process darkroom 1. Wet and dry areas 2. The process camera 3. The contact area 4. The developing sink, temperature control 5. Film storage area 6. Chemical storage area 7. Film and/or diffusion transfer area 13



VIII. ORIENTATION TO REPRODUCTION PHOTOGRAPHY (Continued)

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- 9. Safelights, white lights and switches
- 10. Viewing table with safelight and white light
- 11. Film/paper cutter
- 12. Timers
- 13. Film drying cabinet or machine
- 14. Light trap

C. Light sensitive materials

- 1. Film
 - a. Orthochromatic
 - b. Panchromatic
 - c. Blue sensitive
 - d. High contrast
 - e. Continuous tone
 - f. Negative working
 - g. Reversal -- duplicating
- 2. Film characteristics
 - a. Bases
 - b. Emulsions
 - c. Gelatins
 - d. Antihalation
 - e. Curl
- 3. Paper
 - a. High contrast
 - b. Continuous Tone
 - c. Orthochromatic
 - d. Blue sensitive
 - e. Panchromatic

D. The contacting area

- 1. Types of contact frames
 - a. Mechanical -- top loading with self-contained light
 - b. Glass over compressible surface (sponge rubber)
 - c. Vacuum frame
- 2. Parts of contact frames and controls
 - a. Glass
 - b. Blanket
 - c. Draw-down sheet
 - d. Looking devices
 - e. Vacuum switch and vacuum gauge



LESSON PLA. NO. DATE SCHEDULED VIII. ORIENTATION TO REPRODUCTION PHOTOGRAPHY (Continued) f. Point light source g. Timer 3. Care and use E. Darkroom chemistry 1. Safety in preparing & handling chemicals 2. Developers a. Types 1. Crystals 2. Concentrated liquid 3. Ready-to-use b. Mixing formulas c. Films reaction to developer 3. Fixers a. Types 1. Crystals 2. Concentrated liquid 3. Read-to-use b. Mixing formulas c. Film's reaction to fixers IX. THE PROCESS CAMERA 1. Types of cameras a. Horizontal b. Vertical 2. Parts and adjustments a. Lensboard b. Copyboard c. Lens and lens cap d. Lights 1. Arc 2. Tungsten 3. Metal halide 4. Pulsed xenon e. aperture ring and percentage scale



f. Lensboard and copyboard percentage tapes (scales)

g. Camera bed

h. Bellows

VIII. ORIENTATION TO REPRODUCTION PHOTOGRAPHY (Continued)

- i. Ground glass
- j. Film holder -- vacuum or pressure
- k. Control panel
 - 1. On/off
 - 2. Focus
 - 3. Timer
 - 4. Vacuum switch
 - 5. Percentage tapes controls
 - 6. Start and stop switch
- 1. Halftone flashing lamp and timer

X. LINE PHOTOGRAPHY

- A. Types of copy
- B. Preparing the darkroom
- C. Adjusting the camera
- D. Handling and positioning film
- E. Determining the expose
- F. Using the sensitivity guide or gray scale
- G. Processing the film
 - 1. Time and temperture
 - 2. Inspection
 - 3. Sensitivity guide
 - 4. Machine processing
- H. Treating problem copy
 - 1. Weak lines
 - 2. Fine lines
 - 3. Off-white backgrounds
 - 4. Dropping or holding colors
 - 5. Grayed blacks or poor contrast
 - 6. Yellowish paper or original
- I. Line exposure calibration
 - 1. F/stop
 - 2. Exposure time
- J. Diffusion transfer materials
 - 1. Exposure
 - 2. Processing
 - 3. Applications



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XI. CONTACT

- A. Determining exposures
- B. Positioning film and cleanliness
- C. Processing the film
 - 1. Time and temperture
 - 2. Inspection
 - 3. Sensitivity guide or gray scale
 - 4. Machine processing
- D. Applications
 - 1. Photograms
 - 2. Same-size negatives from original copy
 - 3. Reverses
 - 4. Tints
 - 5. Positives from negatives
 - 6. Duplicate negatives
 - 7. Posterizations
 - 8. Line negatives.
 - 9. Spreading and choking
 - 10. Halftones

XII. HALFTONE PHOTOGRAPHY

- A. Copy and gray scale
 - 1. Continous tone originals
 - a. Black and white photographs
 - b. Water color paintings
 - c. Charcoal sketches
 - d. Pencil Sketches
 - 2. 12 or 21 step gray scales
 - 3. Previously printed halftones
- B. Density measurement and specifications
 - 1. Reflection density guide
 - 2. Densitometer
 - a. Reflection
 - b. Transmission
 - 3. Making and interpreting readings



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XI. CONTACT (Continued)

- C. Halftone screens
 - 1. Theory related to characteristics
 - 2. Care and handling
 - 3. Types
 - a. Glass
 - b. Contact
 - 1. Magenta
 - a. Negative
 - b. Positive
 - 2. Gray
 - c. PMT
 - 4 Dot shape
 - a. Conventional dot (square)
 - b. Elliptical dot
 - c. Double dot
 - 5. Screen Ruling
- D. Exposure computer calibration
- E. Exposure calculations
 - 1. Main (detail)
 - 2. Flash
 - 3. Highlight bump
- F. Processing
 - 1. Tray method
 - a. Time and temperature
 - b. Inspection
 - 2. Automatic processor
 - 3. Stabilization method
 - 4. Diffusion transfer
- G. Tone reprodution
 - 1. Varying density range
 - 2. Identifying 50% dot
 - 3. Affects caused by differnet aperture settings



XIII. SPECIAL EFFECTS

A. Duotones

- 1. Selecting the photograph
 - a. Good contrast
 - b. Good detail
- 2. Selecting colors
 - a. Aesthetic factors
 - b. Psychological factors
 - c. Customer requirements
 - 1. Product colors
 - 2. Colors used elsewhere in job
- 3. Selecting proper halftone dot angles
 - a. Angle copy
 - b. Angle screen
 - c. Preangled screens
- 4. Fake duotones
- 5. Moire pattern
- B. Outline halftones
 - 1. Selection of method
 - a. Opaquing
 - b. Mechanical mask
 - c. Photographic mask
 - 2. Uses of outline halftones
- C. Posterizations

XIV. PROCESS COLOR PHOTOGRAPHY

- A. Basic theories
 - 1. Light
 - 2. Primary colors
 - 3. Process inks
- B. Methods of color separation
 - 1. Direct
 - a. Process camera
 - b. Contact frame
 - c. Enlarger

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XIV. PROCESS COLOR PHOTOGRAPHY (Continued)

- 2. Indirect
 - a. In-camera
 - b. Process camera
 - c. Contact frame
 - d. Enlarger
- 3. Electronic color scanners

XV. QUALITY CONTROL DEVICES

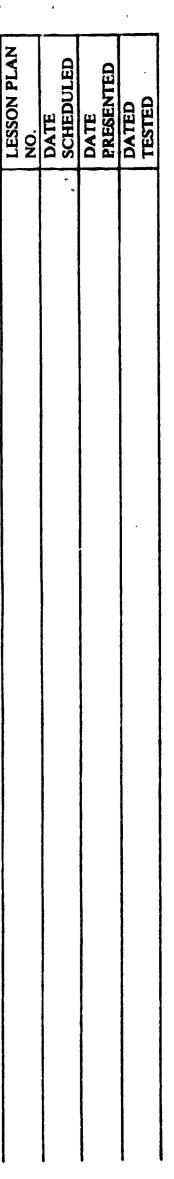
- A. Densitometers
 - B. Exposure computers
 - C. Sensitivity guides
 - D. Register marks
 - E. Gray scale
 - F. Transparent copy guide
 - G. Reflection copy guide
 - H. Color control strips

XVI. PROOFING METHODS

- A. Prepress
 - 1. Diazo-blueprint
 - 2. Electrostatic
 - 3. Brownline
 - 4. Transparent color overlays
 - 5. Transfer color pigments
- B. Press
 - 1. Proof presses
 - 2. Production presses

XVII. STRIPPING

- A. Purpose
- B. Equipment and Supplies
 - 1. Safety
- C. Laying Out the Flat
 - 1. Plate Bend
 - 2. Gripper Bite
 - 3. Reference Marks





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XIV. PROCESS COLOR PHOTOGRAPHY (Continued)

- D. Negative Preparation
 - 1. Trimming
 - 2. Opaquing
- E. Assembly of Negatives
 - 1. Line
 - 2. Inserting Halftones
- F. Imposition
 - 1. Step and Repeat
 - 2. Signature
 - 3. Work & Turn
 - 4. Work & Tumble
- G. Multiple Color Flats
 - 1. Registering Devices
- H. Multiple Exposure Flats
- I. Positive Stripping
- J. Final check against layout
- K. Handling and Storage of Flats

XVIII. PLATE MAKING

- A. Plate Characteristics
 - 1. Surface
 - 2. Grain
- B. Care of Plates
 - 1. Handling
 - 2. Storage
- C. Types of Platemakers
- D. Types of Plates
 - 1. Direct Image
 - 2. Photo Direct
 - 3. Electrostatic
 - 4. Pre-sensitized Surface
 - 5. Wipe-on
 - 6. Positive Working
 - 7. Negative Working
 - 8. Additive
 - 9. Subtractive
 - 10. Deep Etch
 - 11. Multi-Metal
 - 12. Other

XVIII. PLATE MAKING (Continued) E. Exposure Control F. Processing

- 1. Desensitizing
- 2. Developing and Lacquering
- 3. Preserving Plates
- 4. Proper Storage of Plates

XIX. OFFSET DUPLICATORS

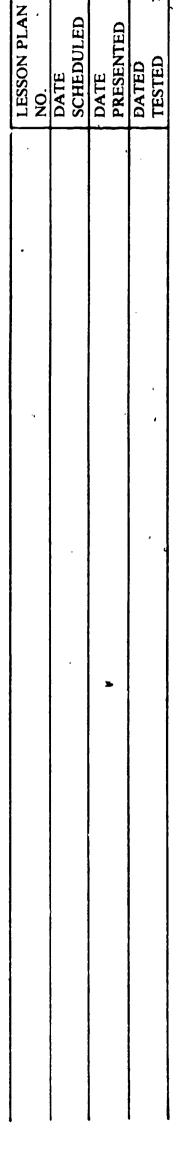
- A. Review of Offset Process
- B. Safety
- C. Operating Controls
 - 1. Power
 - 2. Ink and Moisture
 - 3. Feeder
 - 4. Delivery
 - 5. Air Controls
 - 6. Speed Controls

D. Feeding

- 1. Pile Height
- 2. Air Blowers and Vacuum
- 3. Sheet Separators
- 4. Sheet Forwarding Wheels
- 5. Double Sheet Eliminator
- 6. Register table
- 7. Head Stops
- 8. Side Guides

E. Dampening

- 1. Function
- 2. Types
 - a. Conventional
 - b. Aquamatic
- 3. Function and Names of Rollers
- 4. Dampening System Adjustment
- 5. Fountain Solution
- 6. ph Factor
- 7. Setting Rollers
- 8. Dampening Covers
 - a. Molleton





XIX. OFFSET DUPLICATORS (Continued)

- b. Paper
- c. Disposable

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- d. Other
- 9. Care and Cleaning

F. Inking Unit

- 1. Funtion
- 2. Types of Systems
 - a. Conventional
 - b. Aquamatic
- 3. Ink Rollers
 - a. Names
 - b. Function
- 4. Setting Rollerş
- 5. Ink Fountain
 - a. Filling
 - b. Setting
 - c. Adjusting
- 6. Roller Glaze

G. Printing Unit

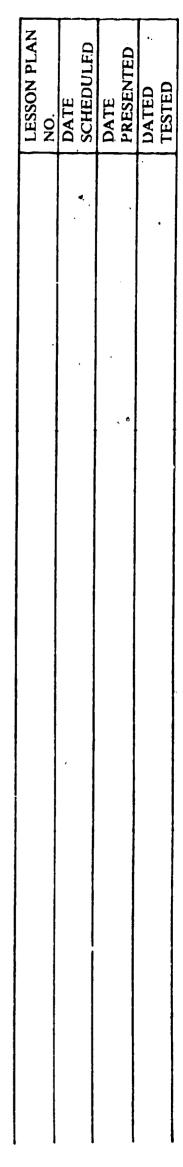
- 1. Plate Cylinder
 - a. Pressure Setting
 - b. Types of Plate Clamps
 - c. Lead Clamp Adjustment
 - d. Care and Cleaning
- 2. Blanker Cylinder
 - a. Types of Blankets
 - 1. Compressible
 - 2. Conventional
 - 3. Two (2) piece
 - b. Pressure Settings
 - c. Image Adjustment
 - d. Changing Blanket
 - e. Care and Cleaning
 - 1. Blanket
 - 2. Cylinder
 - 3. Impression Cylinder
 - a. Care and Cleaning
 - b. Grippers

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XIX. OFFSET DUPLICATORS (Continued)

- H. Delivery System
 - 1. Types
 - á. Chain
 - b. Chute
 - 2. Side Joggers
 - 3. Back Jogger
 - 4. Delivery Grippers
 - 5. Skeleton Wheels
 - 6. Delivery Table
- 1. Trouble Shooting
 - 1. Scumming
 - 2. Tinting
 - 3. Filling Up
 - 4. Piling
 - 5. Set-off
 - 6. Vanishing
 - 7. Sticking
 - 8. Picking
 - 9. Roller Stripping
 - 10. Spraying
 - 11. Mottling
 - 12. Gray Type
 - 13. Chalking
 - 14. Running
 - 15. Hickies
 - 16. Irnage Breakdown
 - 17. Streaking
 - 18. Out of Register
 - 19. No Image
 - 20. Deletions From Plate
- J. Care and Cleaning
 - 1. Lubrication
 - a. Sequence
 - b. Types
 - 2. Housekeeping
 - 3. Washup
 - a. Types
 - b. Procedure





XIX. OFFSET DUPLICATORS (Continued)

- K. Solvents and Chemicals
 - 1. Safety
 - 2. Press Washes
 - a. OSHA Specifications
 - b. Types
 - c. Storage
 - d. Care in Handling
 - e. Proper Uses
 - 3. Plate Cleaners and Conditioners
 - 4. Gums
 - a. Process
 - b. 14° Baume'
 - 5. Fountain Solutions
 - 6. Deletion Fluids

XX. THE OFFSET PRESS

- A. Safety
- **B.** Operating Controls
 - 1. Power
 - 2. Ink
 - 3. Dampening
 - 4. Feeder
 - 5. Delivery
 - 6. Locations of Emergency Stops
 - 7. Cylinder Impression
- C. Feeder and Register Table
 - 1. Pile Height
 - 2. Air and Vacuum
 - 3. Sheet Separators
 - 4. Sheet Forwarding Wheels
 - 5. Double Sheet Eliminator
 - 6. Register table
 - 7. Head Stops
 - 8. Side Guides
 - 9. Sheet Hold Downs
- D. Dampening Unit
 - 1. Function
 - 2. Types
 - a. Conventional
 - b. Continuous Flow (Alcohol)



XX. THE OFFSET PRESS (Continued) 3. Rollers

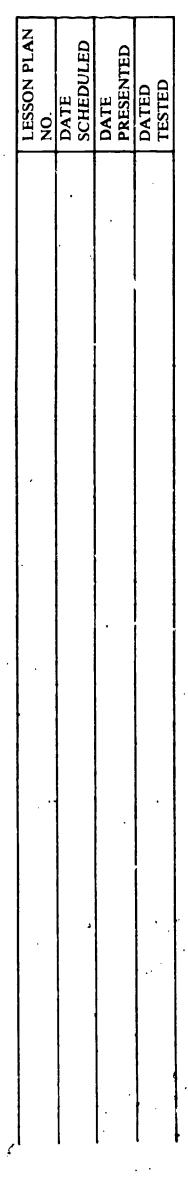
- Koncis
 - a. Names
 - b. Functions
- 4. Adjustment
- 5. Fountain Solutions.
- 6. Setting Rollers
- 7. Dampener Covers
 - a. Molleton
 - b. Paper
 - c. Disposable
 - d. Sleeves
 - e. Other
- 8. Care and Cleaning

E. Inking Unit

- 1. Function
- 2. Rollers
 - a. Names
 - b. Function
 - c. Care
- 3. Setting Rollers
- 4. Ink Fountain
 - a. Filling
 - b. Setting
 - c. Adjusting
 - d. Agitators

F. Printing Unit

- 1. Plate Cylinder
 - a. Purpose
 - b. Plate Clamps
 - c. Cylinder Undercut
 - d. Cylinder Bearers
 - e. Cylinder Packing
 - f. Cylinder Gap
 - g. Vertical/Horizontal Adjustment
 - h. Care and Cleaning
- 2. Blanket Cyclinder
 - a. Pupose
 - b. Cylinder Undercut





LESSON PLAN NO. DATE SCHEDULED DATE PRESENTED XX. THE OFFSET PRESS (Continued) c. Cylinder Bearers d. Cylinder Packing e. Cylinder Gap f. Blanket Installation g. Care and Cleaning h. Positioning Adjustment 3. Impression Cylinder a. Grippers b. Care and Cleaning G. Delivery 1. Joggers 2. Grippers 3. Chain 4. Skeleton Wheels 5. Gripper Release Cam ... 6. Table H. Trouble Shooting I. Care and Cleaning

- 1. Lubrication
 - a. Sequence
 - b. Types
 - c. Automatic Oilers
- 2. General Housekeeping
- 3. Washup
- J. Solvents and Chemicals
- K. Multicolor Sheet Fed Presses
- L. Web Fed Presses

XXI. PRINTING INKS

- A. Composition of Inks
 - 1. Vehicle
 - a. Purposes
 - b. Types
 - 2. Pigments
 - a. Purpose



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XXI. PRINTING INKS (Continued)

- b. Organic Pigments
- c. Inorganic Pigments
- d. Opaque Pigments
- e. Transparent Pigments
- 3. Driers
 - a. Purpose
 - b. Types
- 4. Ink Additives
 - a. Waxes
 - b. Greases and Lubricants
 - c. Reducers
 - d. Varnishes
- 5. Pantone Matching System (PMS)
- B. Manufacture of Printing Inks
- C. How Ink Dries
 - 1. Oxidation
 - 2. Evaporation
 - 3. Absorption (Penetration)
- D. Physical Properties of Ink
 - 1. Viscosity
 - 2. Tack
 - 3. Length of Ink
 - E. Types of Inks
 - 1. Heat Set
 - 2. Quick Setting

High Gloss

- 4. News
- 5. Metallic
- 6. Web
- 7. Magnetic
- 8. Other Specialty Inks

Copyfitting

- F. Ink Troubles
 - 1. Greasing or Scumming
 - 2. Tinting
 - 3. Stripping
 - 4. Piling or Caking
 - 5. Drying
 - 6. Set-off

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XXI. PRINTING INKS (Continued)

- 7. Crystallization
- 8. Trapping
- 9. Wearing of Plates
- 10. Fill-in
- 11. Picking
- 12. Chalking

XXII. PRINTING PAPERS

- A. Manufacture
 - 1. Types of Pulps
- B. Characteristics
 - 1. Grain
 - 2. Felt Side
 - 3. Wire Side
- C. Major Classifications
 - 1. Bond
 - 2. Book
 - 3. Cover
 - 4. Bristol Index/Tag
 - 5. Ledger
 - 6. Specialty Papers
- D. Basic Sizes
- E. Basic Weights
- F. Equivalent Weights
- G. Paper Finishes
- H. Paper Related Printing Problems
 - 1. Lint
 - 2. Curl
 - 3. Dull Knife
 - 4. Other
- I. Calculations
 - 1. Paper Label
 - 2. Ordering
 - 3. Figuring Stock



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LESSON PLAN NO. DATE SCHEDULED DATE PRESENTED DATED TESTED XXII. PRINTING PAPERS (Continued) 4. Cutting Diagram XXIII. FINISHING AND BINDING A. Binding Equipment Safety B. Handling Paper C. Folders 1. Types of Folders a. Suction b. Friction c. Stream Feed D. Types of Binding 1. Stitching a. Side Wire b. Saddle 2. Perfect 3. Case 4. Sewn E. Trimming F. Mechanical Binding 1. Plastic 2. Wire Spiral 3. Aluminum Fasteners G. Padding H. Other Finishing Procedures 1. Perforating 2. Die Cutting 3. Drilling 4. Round Cornering 5. Punching 6. Collating a. Hand b. Machine 7. Packaging a. Hand b. Machine



8. Other

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XXIV. JOB PLANNING

- A. Customer Requirements
- B. Customer Relations
- C. Estimating & Purchasing
 - 1. Copyfitting
 - 2. Materials
 - 3. Labor
 - 4. Time/Materials
 - 5. Fixed Costs
 - 6. Overhead
 - 7. Profit
- D. Scheduling
- E. The Job Ticket

XXV. EMPLOYEE-EMPLOYER RELATIONS

- A. Filing an Application
- B. Interviews
- C. Attitude
- D. Work Habits
- E. Working For/With Others
- F. Responsibility
- G. Graphic Communications Labor Unions & Associations

XXVI. LEGAL CONSIDERATIONS

- A. Copyright Laws
- B. Counterfeiting
- C. Illegal & Offensive Material



| | 1.£; V | USABILITY | AUTHOR | PUBLISHER | CPYR |
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| Photo Offset Fundamentals Study Guide COMMENTS: Paperback: 2 | 12.5 | OK* = Good | John E. Cogli ocabulary develo | McKnight Publishing Co. | 1973 |
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| Photo Technology COMMENTS: Good visual, | | | Lathrop | nical Society | |
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GENERAL GRAPHIC COMMUNICATIONS OBJECTIVES

The Graphic Communications course of study in the Vocational-Technical Schools of Connecticut is designed to provide students with basic training in the field of graphic communications.

On Successful completion of this course the student will be able to take a SAFE and workmanlike approach in solving theoretical and actual on-the-job problems. The student will know where to locate pertinent information, both technical and practical, to accomplish all assignments in the most practical and proper manner.

As a result of experience gained through the broad objectives listed below; the student will:

- 1. be able to recognize the major printing processes and their respective products and know the relative merits of each process;
- 2. be able to perform in the areas of copy preparation, reproduction photography. stripping, platemaking, presswork and finishing with a level of proficiency suitable for job entry as an advanced learner;
- 3. have the related technical knowledge needed to supplement skills in the areas itemized above in order to make rational decisions:
- 4. have a realistic concept of his abilities and limitations in the various areas comprising the graphic communications;
- 5. have the personal traits of promptness, willingness to work, and the ability to accept supervision;
- 6. be able to follow written and oral directions:
- 7. be aware of the interrelationships among production departments and the contributions each area makes to the other.
- 8. respect the potential for personal injury of production equipment and use appropriate safety precautions when working around such equipment;
- 9. have an accurate concept of the most common occupations in graphic communications and the traits and preparation required of employees desiring to succeed in those occupations;
- 10. understand the relationship between continuous training and success in an occupation.



OBJECTIVES - GRADE 10

Upon successful completion of the tenth grade, the student should be able to:

- 1. Work around printing equipment using safe work habits.
- 2. Prepare a mechanical for a simple one color printing job.
- 3. Proofread using the proper proof marks.
- .4. Scale camera copy for reduction/enlargement.
- 5. Prepare the darkroom and process camera for operation.
- , 6. Produce acceptable line negatives and contact prints.
 - 7. Lay out and strip a flat for an offset duplicator.
 - 8. Expose and process presensitized offset plates.
 - 9. Prepare an offset duplicator for operation.
 - 10. Run a single color job on an offset press.
 - 11. Handle printing papers properly.
 - 12. Calculate the number of stock sheets required for a given job.
 - 13. Set up and operate a power cutter safely.
 - 14. Perform simple bindery operations.
 - 15. Communicate in trade situations using trade terminology.

OBJECTIVES - GRADE 11

Upon successful completion of grade 11, the student should be able to:

- 1. Work around printing machinery using safe work habits.
- 2. Mark up copy specifications for phototypesetting.
- 3. Perform basic phototypesetting operations.
- 4. Prepare, maintain and operate film/paper processors.
- 5. Prepare a camera ready mechanical with masks, overlays.
- 6. Calculate exposure times for copy of varying qualities.
- 7. Expose and process negatives using time/temperature method.
- 8. Calcualte exposure times for making halftone negatives.
- 9. Photograph camera ready copy using photo mechanical process.
- 10. Prepare impositions and strip flats for multiple page and multicolor forms.
- 11. Prepare step-and-repeat and other multi-burn flats.
- 12. Expose and process offset plates requiring multiple exposures.
- 13. Identify the various kinds of printing papers.
- 14. Calculate the amount of paperrequired to print a given job.
- 15. Print multi-color jobs and jobs requiring close register on an offset duplicator.
- 16. Perform basic operations required to print single color work on an offset press.
- 17. Set up and operate air feed folder for single fold.
- 18. Follow job specifications as written on job ticket.



OBJECTIVES - GRADE 12

On successful completion of grade 12, the student should be able to:

- 1. Write formats and use proper codes for setting type on the phototypesetter.
- 2. Mark up a printing job for type styles and sizes.
- 3. Change film fonts/discs on phototypesetter.
- 4. Perform more difficult camera operations.
- 5. Perform more complex phototypesetting operations.
- 6. Prepare impositions and strip flats for complex forms.
- 7. Perform those operations on an offset press which are required to hold register, ink and water balance, and proper ink coverage.
- 8. Set up and operate various bindery machines.
- 9. Fill out a job ticket accurately.
- 10. Cost out a printing job using proper estimating procedures.
- 11. Perform in a trade enviornment, recognizing the importance of SAFETY, proper work habits, good character and proper attitude when entering the work force.
- 12. Seek employment in the Graphic Communications industry.



RECORDING STUDENT PROGRESS

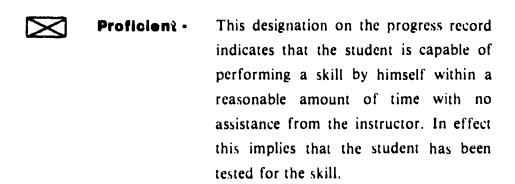
A major principle of vocational education is that the students learn skills or the performance of operations of a trade with the production job as a vehicle to accomplish this objective.

The operations are defined on the shop progress record and it is imperative that the instructor have some means of recording the student experiences and achievement.

The approved method of recording student progress is as follows:

| instructed - | This designation on the progress record |
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| | indicates that the student has performed a |
| | skill with the assistance of and under the |
| | supervision of the instructor. |

| Practiced - | This designation on the progress records |
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| | indicates that the student has performed a |
| | skill either by himself or with little help |
| | from the instructor. |



This method of noting student progress will define accurately student achievement and in fact will point out any weaknesses the student may have in certain operations; thus highlighting areas where the student may need help.

Grades should be kept on student daily progress cards or in roll books.



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| Prepare simple mechanical | Burnish type | Clean mechanical | Prepare combination mechanical | Scale copy for entargement/ reduction | Prepare ruled form | Paste up using preprinted tints | Paste up using Prestype | Paste up using Rubylith | Paste up using overlays | Paste up using rule tapes | Paste windows | Draw round corners | Paste up simple advertisement | Paste up form w/bleeds | *************************************** |
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COLD TYPE COMPOSITION (Non Photo)

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| Prepare machine for operation | Change type fonts | Set letterspacing | Set word space | increaso/decrease line spacing | Set line length | Change ribbon | Set flush left lines | Set flush right lines | Set centered lines | Set justified type | Sot tabular mattor | Set runarounds | Set type with rules | Store fonts |
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PHOTOCOMPOSITION (Display)

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| Set (up machine for operation | Prepare Chemicals | Set a simple line | Letterspace words | Condense words | Develop line | Clean machine | Change film/paper | Advance film/paper | Change disc/film strip | | | | | | |
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| | Propare typesetter for operation | Initialize typesetter | Insort/initialize disc | Set type flush left | Set type flush right | Set type centered | Store job on disc/tape | Call job to scroon | Edit copy on screen | Replace copy on screen | Delete copy on screen | Change font/width card | Remove/replace cassette | Change paper/film | Load photographic material |
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| Clean & maintain phototypesetter | | | | | | | |
| Set tab parameters | | | | | | | |
| Increase/decrease density | | | | | | | |
| Space only | | | | | | | |
| Flash only | • | | | | | | |
| Insert baseline rule | | | | | | | |
| insert leader | | | | | | | |
| Insert character | | | | | | | |
| Increase/decrease line spacing | | | | | | | |
| Increase/decrease letterspacing | | | | | | | |
| Set type w/ fixed spaces | | | | | | - _ | |
| Set justified type | | | | | | | |
| Insert space | | + | | | | | |

PHOTOTYPESETTING PROCESSORS

WIRE STITCHER

| • | PHOT | OTYPE | SETTI | NG PRI | OCESS | ORS | | | | WiRi | E STIT | CHER | | | |
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| | Prepare chemicals | Develop film/paper | Replenish chemistry | Clean & maintain processor | | | | | | Set for thickness | Set length of stitch | Set for side wire stitch | Set for saddle stitch | Change spool | |
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DARKROOM PROCEDURES

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| Sot up darkroom | Mix chemicals | Handle film properly | Cut film | Develop & fix film | Read sensitivity guide | Wash negative/positive | Dry film | Evaluate negativos | Chemical etch | Store film | Keep darkroom clean | | | |
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PRÓCESS CAMERA

| | | hts | | | | ing ground | nd glass | . | - | uum board | | ights | |
|---------------|-----------|----------------------|-------------------|------------------|------------|-----------------------------------|--------------------------|-------------------|------------------|----------------------------|-------------|-----------------------|-------------|
| Set aperature | Set timer | Adjust camera lights | Clean copy holder | Load copy holder | Clean lens | Position image using ground glass | Focus using ground glass | Focus using tapes | Set vacuum board | Place film on vacuum board | Expose film | Replace camera lights | |
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| Place sensitivity guide | Expose same size copy | Expose reduction | Expose enlargement | Expose copy of different quality | Proportion scaling | Expose copy using filters | | | Jog paper | Set back guage | Operate cutter | Split backgage | Replace cutting stick | Lubricate cutter |
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CONTACTING Make contact w/process camera Make contact w/pt. Fight source Clean & maintain PMT processor Make contact w/enlarger Make PMT transparency Make spreads/chokes Make reverse print Make PMT positive Make PMT hatttone Make PMT reverse Make film positive Make paper print Duplicating film

HALFTONE PHOTOGRAPHY

| | | НОТО | | • | | | | negative | ! | egative | tone | au | /temp. | | |
|---------------------------------------|------------------------------|--------------------|---------------------|---|--------------------|---------------------------------------|-------------------|----------------------------------|---|--------------------------------|--------------------------------------|---------------------------|---|-----------------|---|
| Photograph contact screen | Photograph halftone computer | Make main exposure | Make flash exposure | Make bump exposure | Make test negative | Evaluate negative | Find screen range | Make corrected halftone negative | Make duotone negatives | Make dropout halftone negative | Make negative from halftone print | Rescreen printed halltone | Process halftone by time/temp. | | |
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| camera | per settings | | сатвга | film on reel | | : : : | print | 10 | d | rgement | print | ess print | | |
|---------------------|---------------------------|---------------------------------------|---------------------------------------|---------------------------|---------------|-------------------|--------------------|-----------------|-----------------|---------------------|--------------------|-----------------------|--------------|---------------|
| Operate hand camera | Determine proper settings | Change lenses | Load/unioad camera | Lcad exposed film on reel | Mix chemistry | Develop roll film | Make contact print | Set up entarger | Make test strip | Make an enlargement | Tray process print | Machine process print | Handle print | Dodge/burn in |
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STRIPPING

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| | | | | | , | Rule for accuracy | Layout a simple flat | Trim negatives | Align/position negatives | Tape down negatives | Check flat against layout | Cut windows | Opaqı'e negatives | S'irip for double burn | |
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STRIPPING

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| Strip for step & repeat | Strip using pins/tabs | Plan an imposition | Make imposition dummy | Strip a gang flat | Strip multiple page flats | Strip trim/fold marks | Make color masks | Strip silhouettes | Strip in corrections | Strip register marks | | | : |
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| Operate platemaker | Burn plate for simple exposure | Burn plate w/multiple images | Burn step & repeat plate | Burn plate for register | Process additive plate | Process subtractive plate | Process transfer plate | Process direct image plate | Process electrostatic plate | Desensitize a plate | Preserve a plate | Store a plate | Replace light source | | |
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| | Set feeder | | Load stock to dummy Set air blast | | | | | | | | | | |

| Set delivery Lubricate duplicator Handle paper Set feed rollers Set transfer tapes Set transfer tapes Set transfer tapes Set air blast Set vacuum Set suckers | , | PAPER | FOL | DER | T | OFFSI | ET DU | PLICAT | ror | - | _ | _ | , | | . | • • | , |
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| | | Set delivery | • | | | Lubricate duplicator | Handle paper | Set feeder | Set feed rollers | Set caliper | Set transfer tapes | Set side guide | Set head stop | Sot air blast | Set vacuum | Set suckers | |
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| Install plate | Raise/lower image | Mix fountain solution | Set dampeners | Set ink rollers | Adjust ink fountain | Adjust dampener dwell | Get proper position | Set delivery/chute | Set delivery/chain | Set spidar wheels | Adjust plate to blanket pressure | Adjust impression cylinder pressure | Clean blanket | Clean impression andicates |
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| Clean dampener covers | Change dampener covers | Wash duplicator | Check for register | Deglaze rollers | | | | | | | | | | |
| Clean | Chang | Wash | Check | Degla | | | | | : | | | | | |
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| \ | Lubricate press | Set up feeder | Load paper stock | Set register table | Set guides near/far | Change side guide | Set double sheet trip | Read micrometer | Pack plate | Install plate | Pack blanket | install blanket | Set dampener fountain | Read hydrometer | Mix fountain solution |
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| Set dampener rollers | Recover dampener rollers | Remove/replace dampener rollers | Test for ph | Set ink fountain | Adjust ink fountain | Set ink roliers | Remove/replace ink rollers | Deglaze rollers | Set delivery | Set cylinder pressures | Raise/lower image | Adjust cylinder lay | Automatic washup | Register for color |
| Set | Reco | Remo | Test | Set | Adju | Set i | Rem | Degi | Set | Set | Rais | Adju | Auto | Regi |
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| r drill | Set paper drill for round corners | . E | Set/operata plastic binder | dding | Operate electric numbering machine | | ! | | SUO | | | | <u> </u> . | |
| Set/operate paper drill | drill for | p mollon | ta plast | ed/m s | ectric n | kages | | * | 25.22 | | | | | |
| ot/opera | of paper | Sharpen hollow drill | st/opera | Make pads w/padding compound | Operate el machine | Wrap packages | Hand fold | Count stock | Handle paper cartons | | | | | |
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